

REMARKS/ARGUMENTS

Favorable reconsideration of this application as amended is respectfully requested.

Claims 1-15 have been amended to correct informalities, and, in particular, Claims 1, 9, and 12, 13 and 15 have been amended to remove the basis for the rejection under 35 U.S.C. § 112, second paragraph. Accordingly, Claims 1-15 remain pending in the application.

Claims 1, 5, and 11 were rejected under 35 U.S.C. § 102(b) as being anticipated by Watanabe et al., (U.S. Patent 6,156,663, Watanabe). Reconsideration of the rejection is respectfully requested.

The Office asserts that the Watanabe reference discloses an etching method for patterning a multi-layered or single-layered aluminum wiring using a mixture of gases of Cl_2 , BCl_3 and CH_4 . The Office further asserts that effects similar to those described in the reference can be achieved using a mixed gas having $\text{C}_x\text{H}_y\text{Cl}_z$ (wherein each of x, y and z is 0 to 8) and Ar in place of the CH_4 component (Watanabe, column 7, lines 66-67).

However, the Watanabe reference does not specifically disclose the use of CH_2Cl_2 gas, with or without the additional presence of Ar. Thus, the Watanabe reference

does not provide a basis for a rejection of Claims 1, 5 and 11 under 35 U.S.C. § 102(b). Accordingly, the Examiner is respectfully requested to withdraw the rejection.

Moreover, the evidence presented in the specification at page 9, lines 1-13, and summarized in Figure 3 shows that the claimed process using CH_2Cl_2 as an additive gas achieves a substantial reduction in critical dimension (CD) shift together with an increase in etching rate as compared with the prior art method using PR gas (mixture of CH_4 and Ar, specification, page 7, lines 6-7). This improvement is not taught or suggested by the disclosures of Watanabe.

Claims 2-3, 6-7, 9, and 12-14, were rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe (U.S. Patent 6,156,663) in view of Abraham (U.S. Patent 4,838,992). Reconsideration of the rejection is respectfully requested.

Claims 2-3 and 6-7 are allowable at least as dependent from allowable independent Claim 1.

Furthermore, the Office bases the combination of Abraham with Watanabe on the assertion that Abraham teaches the use of a gaseous mixture of Cl_2 , BCl_3 and a hydrocarbon for plasma etching of aluminum films (page 5, lines 7-8, of the Office Action). Applicants do not see in the Abraham

reference (U.S. Patent 4,838,992) any disclosure of using a hydrocarbon gas in combination with a gaseous mixture of Cl_2 , BCl_3 . The Examiner is respectfully requested to indicate where in the Abraham reference such a mixture and its use in plasma etching is disclosed. In the absence of such disclosure in the Abraham reference, Abraham is not usable as a secondary reference. Accordingly the rejection of Claims 2-3, 6-7, 9, and 12-14 under 35 U.S.C. § 103(a) is inappropriate, and the Examiner is respectfully requested to withdraw it.

Claims 4 and 8 were rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe in view of Collins et al. (U.S. Patent 5,300,460). Reconsideration of the rejection is respectfully requested.

The deficiencies of the Watanabe reference have been discussed above. The Collins reference, as applied by the Office, merely discloses certain frequencies used to generate an etching plasma (Collins, column 3, lines 58-63). Such disclosure does not supplement the disclosures of the Watanabe reference to make obvious the embodiments of the invention claimed in Claims 4 and 8. Accordingly, these claims are not obvious in view of the

applied references, and the Examiner is respectfully requested to withdraw the rejection.

Claim 10 was rejected under 35 U.S.C. 103(a) as being unpatentable over Watanabe (U.S. Patent 6,156,663) in view of Davis et al. (U.S. Patent 4,828,649). Reconsideration of the rejection is respectfully requested.

The deficiencies of the Watanabe reference have been discussed above. The disclosures of the Davis reference, as cited by the Office, which are limited to a process of ashing a photoresist using a gas mixture of oxygen and a fluorine-containing gas (Davis, column 63, lines 38-44), do not teach or suggest using CH_2Cl_2 as an additive to an etching plasma, and therefore do not remedy the deficiencies of the Watanabe reference. Accordingly, Claim 10 is not obvious in view of the applied references, and the Examiner is respectfully requested to withdraw the rejection.

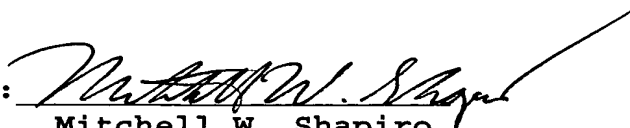
In view of the above amendments and discussion, this application is believed to be in condition for allowance, and an early Notice of Allowance is respectfully requested.

The Commissioner is hereby authorized to charge to Deposit Account No. 50-1165 any fees under 37 C.F.R. § 1.16 and 1.17 that may be required by this paper and to credit

any overpayment to that Account. If any extension of time is required in connection with the filing of this paper and has not been requested separately, such extension is hereby requested.

Respectfully requested,

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